REMARKS

Claims 1 and 16 have been amended, and Claims 28-31 have been added. Claims 1-31 are pending in the application. An accompanying Amendment Transmittal calculates the additional filing fee necessitated by the added claims, and an accompanying check includes this additional fee. In view of the foregoing amendments, and the remarks that follow, Applicants respectfully request reconsideration.

Independent Claim 1

Independent Claim 1 stands rejected under 35 U.S.C. §103 as obvious in view of a proposed combination of teachings from Hammerstrom U.S. Patent No. 3,184,628 and newly-cited Frister U.S. Patent No. 4,347,543. This ground of rejection is respectfully traversed. In this regard, the PTO specifies in MPEP §2142 that:

> The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.

Applicants respectfully submit that Hammerstrom and Frister fail to establish a prima facie case of obviousness under §103 with respect to Claim 1, for mutually exclusive reasons that are discussed separately below.

THE PRIOR ART MUST TEACH ALL CLAIM LIMITATIONS UNDER §103

The proposed combination of Hammerstrom and Frister does not teach the subject matter of Claim 1. In this regard, the provisions of MPEP §2142 specify with respect to §103 that:

> To establish a *prima facie* case of obviousness . . . the prior art reference (or references when combined) must teach or suggest **all** the claim limitations. (Emphasis added).

The PTO considers this requirement to be important, as evidenced by the fact that this exact language appears not only in MPEP §2142, but also in other sections of the MPEP, including MPEP §706.02(j) and MPEP §2143. Applicants' Claim 1 includes a recitation of:

> creating a bias flux that varies with rotor position and that links the at least one phase winding; and
>
> limiting the phase voltage to a magnitude below that otherwise induced in the phase winding by the bias flux.

With respect to the clause reciting creation of a bias flux, the Office Action relies solely on Hammerstrom. In particular, Hammerstrom discloses in Figure 1 a variable reluctance machine 10 having a stator 11 and a rotor 12. The stator 11 has a plurality of angularly distributed poles 23 and 24, where the poles 23 alternate with the poles 24 in a circumferential direction. The machine has one winding 28 with respective portions 28a-28f that each encircle a respective one of the poles 23, and has a second winding 30 with respective portions 30a-30f that each encircle a respective one of the poles 24. The Examiner asserts that Hammerstrom discloses "a constant current source (20) connected to excite the at least one bias coil". However, contrary to the assertions of the Examiner, the element 20 in Hammerstrom is not a constant current source. More specifically, element 20 in Hammerstrom is a battery that applies a constant voltage to the ends of the winding 28. As to Frister, the Office Action relies on Frister for a teaching that relates to a part of Claim 1 other than the limitation reciting creation of a bias flux. Consequently, the indicated portions of Frister add nothing to Hammerstrom with respect to creation of a bias flux.

Turning to the last clause in Claim 1, Applicants recite "limiting the phase voltage to a magnitude below that otherwise induced in the phase winding by the bias flux". In regard to this limitation, the Examiner relies on Frister, and in particular asserts that the Zener diode 16 in Figure 1 of Frister could be incorporated into the machine 10 of Hammerstrom in order to limit a phase voltage. However, with reference to Figure 1 of Frister, and contrary to the assertions in the Office Action, Frister's Zener diode 16 is not coupled in series with a phase winding.

Instead, as is typical in an automotive alternator of this type, the windings have a star (wye) configuration and are all coupled to a bridge circuit 13, and the Zener diode 16 is coupled across the bridge circuit 13. In addition, during operation of Frister, the Zener diode 16 is not the structure that has primary responsibility for limiting the output voltage. Instead, a voltage regulator circuit 12 monitors the voltage at the output 22 of the alternator, and controls a field winding in the rotor of Frister's machine 11 so as to regulate the output voltage at 22.

Even assuming for the sake of discussion that the Zener diode 16 of Frister could be incorporated into Hammerstrom, as proposed in the Office Action, it is respectfully submitted that the subject matter of Claim 1 would still not be met. In particular, even if the Zener diode 16 of Frister was added to Hammerstrom, it does not appear that it would act specifically to limit a phase voltage "to a magnitude below that otherwise induced in the phase winding by the bias flux" (emphasis added). The Examiner will appreciate that Frister is only concerned with a field winding on the rotor. There is no mention at all in Frister of creating a bias flux on the stator or elsewhere.

Summarizing, neither Hammerstrom nor Frister teaches circuitry that is specifically configured to limit a phase voltage "to a magnitude below that otherwise induced in the phase winding by the bias flux" (emphasis added). Hammerstrom and Frister cannot together teach something that they each fail to teach separately. Consequently, even when the indicated teachings from Hammerstrom and Frister are combined, they fail to satisfy the requirement of MPEP §2142 that they must collectively "teach or suggest **all** the claim limitations" (emphasis added). Therefore, for this independent reason alone, it is respectfully submitted that Claim 1 is not rendered obvious under §103 by Hammerstrom and Frister, and notice to that effect is respectfully requested.

THE PROPOSED MODIFICATION OF HAMMERSTROM IS NOT PROPER

There is yet another reason why the proposed modification of Hammerstrom is not proper under §103. In this regard, MPEP §2142 provides that:

> To reach a proper determination under §103, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. . . . Knowledge of applicant's disclosure must be put aside in reaching this determination, . . . impermissible hindsight must be avoided, and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

In addition, the MPEP provides at § 2143.01 that:

> The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. . . . Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so". (Emphasis in original).

The present Office Action asserts at lines 7-11 on page 3 that:

> . . . Hammerstrom et al. states that overvoltages need to be prevented in vehicle generator systems but does not disclose how such protection may be achieved.

The Office Action then goes on to assert that it would be obvious to incorporate the Zener diode 16 of Frister into Hammerstrom. However, even assuming for the sake of discussion that a person skilled in the art was motivated to add the Zener diode of Frister to Hammerstrom, it is respectfully submitted that this is not enough. In particular, the person would need additional motivation in order to also make additional modifications to Hammerstrom in a manner so as to

specifically limit a phase voltage "to a magnitude below that otherwise induced in the phase winding by the bias flux" (emphasis added). This additional motivation is not found in either Hammerstrom or Frister, and therefore the source of such additional motivation would necessarily be hindsight of the teachings in Applicants' disclosure. In regard to hindsight, examiners frequently turn to PTO Form Paragraph 7.37.03, which states that "any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning". However, even this form paragraph goes on to emphasize that hindsight is permissible only if it "does not include knowledge gleaned only from the applicant's disclosure" (emphasis added). Here, Hammerstrom and Frister cannot possibly render the subject matter of Claim 1 obvious, unless the analysis also includes hindsight of Applicant's disclosure. But MPEP §2142 and Form Paragraph 7.37.03 both make it very clear that hindsight of Applicant's disclosure cannot be used under §103. In the present situation, without hindsight of Applicants' disclosure, there is no motivation to make all the modifications to Hammerstrom that are necessary in order to obtain the entirety of the subject matter recited in Claim 1. Accordingly, for this independent reason alone, it is respectfully submitted that Claim 1 is not rendered obvious under §103 by Hammerstrom and Frister, and notice to that effect is respectfully requested.

In view of the various different reasons discussed above, it is respectfully submitted that Claim 1 is not rendered obvious under §103 by Hammerstrom and Frister. Claim 1 is therefore believed to be allowable, and notice to that effect is respectfully requested.

Independent Claim 16

Independent Claim 16 stands rejected under 35 U.S.C. §103 as obvious in view of a proposed combination of teachings from Hammerstrom and Frister. This ground of rejection is respectfully traversed. Claim 16 recites:

> means for creating a bias flux that varies with the position of the second part relative to the first part, and that links the at least one phase winding; and

> means for limiting the magnitude of the phase voltage below that otherwise induced in the at least one phase winding by the bias flux.

The rationale given in the Office Action for the rejection of Claim 16 is the same rationale given for the rejection of Claim 1. Therefore, for the same basic reasons discussed above in association with Claim 1, it is respectfully submitted that Claim 16 is is not rendered obvious under §103 by Hammerstrom and Frister. Claim 16 is therefore believed to be allowable, and notice to that effect is respectfully requested.

Dependent Claims 28-30

Dependent Claims 28-30 are new claims that recite various structural arrangements for generating a bias flux, and it is respectfully submitted that neither Hammerstrom nor Frister discloses comparable structure. Consequently, Claims 28-30 are believed to be allowable, and notice to that effect is respectfully requested.

Independent Claim 31

Independent Claim 31 is a new claim and recites:

> . . . excitation of the phase winding driving flux around a magnetic circuit having an reluctance that varies as a function of rotor position, said operating as a generator including:
>
> creating a bias flux around said magnetic circuit; . . . .

Thus, Claim 31 recites that the bias flux flows around the same magnetic circuit as the flux associated with the phase winding. Hammerstrom is different, because he has his winding 28 on a first set of poles and his winding 30 on a second and different set of poles. The flux paths associated with his first poles are quite complicated. In most positions of the rotor, they do not share the same flux path as the second poles. What is more, the first poles in Hammerstrom

do not use the entire-flux path as the second poles in any rotor position. Hammerstrom is thus different from Claim 31. Frister adds nothing to Hammerstrom in this regard. Consequently, Claim 31 is believed to be allowable, and notice to that effect is respectfully requested.

Dependent Claims

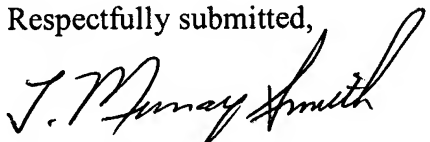
Claims 2-15 and Claims 17-27 respectively depend from Claim 1 and Claim 16, and are also believed to be distinct from the art of record, for example for the same reasons discussed above with respect to Claims 1 and 16.

Conclusion

Based on the foregoing, it is respectfully submitted that all of the pending claims are fully allowable, and favorable reconsideration of this application is therefore respectfully requested. If the Examiner believes that examination of the present application may be advanced in any way by a telephone conference, the Examiner is invited to telephone the undersigned attorney at 972-739-8647.

Although Applicants believe that no fee is due in association with the filing of this Amendment, the Commissioner is hereby authorized to charge any fee required by this paper, or to credit any overpayment, to Deposit Account No. 08-1394 of Haynes and Boone LLP.

Respectfully submitted,



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R-141068.1